REMARKS

The following remarks, presented in conjunction with the above claim amendments, are believed to be fully responsive to the issues raised in the Office Action. Claims 23-30 were pending in this application. By this Amendment, claims 23 and 27 have been amended. No new matter has been added. Favorable reconsideration is requested. Claims 23 and 27 are the sole independent claims.

Support for the amendments can at least be found in the following paragraphs (references are to paragraph numbers of the published version of the Specification, U.S. Patent Application Pub. No. 2004/0133165):

> [0059] In a preferred embodiment of the present invention, syringe body 18 , manifold 26 , tube 28 , catheter 30 , T-connector 36 , tubing 42 , check valves 46 and 48 , bags 50 and 52 , and tubing 90 and 92 are all disposable items. They must be installed in system 10 each time an angiography procedure is to be performed with a new patient. Once system 10 is set up with all the disposable items installed, door 70 is closed, and syringe body 18 filled with contrast material and purged of air, the user (typically a physician) enters into system 10 the **safety parameters** that will apply to the injection of radiographic contrast material. These safety parameters typically include the maximum amount of radiographic contrast material to be injected during any one injection, the maximum flow rate of the injection, the maximum pressure developed within syringe body 18 , and the maximum rise time or acceleration of the injection. To actuate an injection of contrast material, the user operates remote control 14 by squeezing trigger 66. Within the preset safety parameters, system 10 causes the flow rate of the injection to increase as the force or distance of travel of trigger 66 is increased.
>
> [0094] FIG. 4 shows one embodiment of control panel 54 which illustrates the front panel control switches 56 and display 58 of one embodiment of the present invention. Front panel control switches 56 include Set Up/Fill/End switch 200 , Purge switch 202 , Aspirate switch 204, Saline switch 206 , Enable OK switch 208 , **Injection Volume Limit switches 210a and 210b, Injection Flow Rate Limit switches 212a and 212b , Injection Pressure Limit switches 214a and 214 b , Rise Time switches 216**a and 216b OK switch 218 , Injection Range Toggle switch 220, Large Injection OK switch 222 , and Stop switch 224 .
>
> [0102] **Injection Volume Limit keys 210a and 210b are pushed to either increase or decrease the maximum injection volume that the system will inject during any one**

injection. Key 210a causes an increase in the maximum volume value, and key 210b causes a decrease. Once the maximum injection volume limit has been set, if the measured volume reaches the set value, computer 100 will stop motor 104 and will not restart until OK switch 218 has been depressed. If a large injection (i.e., greater than 10 ml) has been selected, OK switch 218 and Large Injection OK switch 220 must both be reset prior to initiating the large injection.

[0103] **Injection Flow Rate Limit keys 212a and 212b allow the physician to select the maximum flow rate that the system can reach during any one injection**. If the measured rate (which is determined by the feedback signals from tachometer 108 and potentiometer 110) reaches the set value, computer 100 will control motor 104 to limit the flow rate to the set value.

[0104] **Injection Pressure Limit keys 214a and 214b allow the physician to select the maximum pressure that the system can reach during any one injection**. If the measured pressure, as determined by pressure sensor 114, reaches the set value, computer 100 will control motor 104 to limit the pressure to the injection pressure limit. The injection rate will also be limited as a result.

[0105] **Rise Time keys 216a and 216b allow the physician to select the rise time that the system will allow while changing flow rate during any one injection.** Computer 100 controls motor 104 to limit the rise time to the set value.

(emphasis added)

Rejections Under 35 U.S.C. § 102(b)

Claims 23-25, 27 and 31 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Pat. No. 4,596,575 to Rosenberg, et al. ("Rosenberg"). Claims 23-27 and 29-31 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Pat. No. 4,502,488 to Degeronimo, et al. ("Degeronimo").

As amended herein, claim 23 recites the following:

A method for automatically refilling a syringe for an angiographic injector arrangement, said method comprising:

sensing a volume of fluid in a chamber of said syringe **following an injection**;

providing a fluid reservoir in communication with said chamber;

receiving a user input associated with a subsequent injection**, the user input comprising a safety parameter for the subsequent injection selected from the group consisting of maximum injection volume, maximum flow rate, maximum pressure, and rise time**;

determining a preset amount of fluid necessary for the subsequent injection based on the user input;

comparing said volume in said chamber with said preset amount of fluid; ~~and~~

advancing a plunger within said chamber of said syringe to perform the subsequent injection if said preset amount of fluid is equal to or less than the volume of fluid sensed in said chamber, and

retracting a plunger to a predetermined position within said chamber of said syringe to draw fluid from the fluid reservoir into the chamber ~~when~~ **if** said preset amount of fluid is greater than the volume of fluid sensed in said chamber.

Neither Rosenberg nor Degironimo teaches the additional features of amended claim 23. For example, neither reference provides for receiving user input associated with a subsequent injection, where said user input comprises a safety parameter for the subsequent injection selected from the group consisting of maximum injection volume, maximum flow rate, maximum pressure, and rise time. Neither teaches proceeding with a subsequent injection without any refilling if there remains after a first injection sufficient fluid. Thus, neither teaches advancing a plunger within the chamber of the syringe to perform the subsequent injection if the preset amount of fluid is equal to or less than the volume of fluid sensed in said chamber after the first injection, as recited in claim 23, as amended. Thus, for at least the reasons presented above, claim 23 is believed to be patentable over the prior art.

Claim 27, as amended, recites limitations analogous to those of amended claim 23, and is therefore believed to be patentable for at least similar reasons. The remaining claims all depend from one of independent claims 23 and 27, either directly or indirectly, and are therefore also believed to be patentable for similar reasons.

Rejections Under 35 U.S.C. § 103(a)

Claim 26 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Rosenberg in view of U.S. Patent No. 4,684,365 to Reinicke ("Reinicke"). Claim 28 stands rejected as unpatentable over Degironimo and further in view of U.S. Patent No. 3,888,239 to Rubinstein ("Rubinstein"). Finally, claims 32-37 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Rosenberg or Degironimo in further view of U.S. Patent No. 5,672,155 to Riley, et al. ("Riley").

Reinicke, Rubenstein and Riley were only cited as teaching additional features of certain dependent claims. In particular, Reinicke was cited as allegedly teaching air purging from the syringe chamber, and Rubenstein was cited as allegedly teaching an injector capable of injecting contrast material. Similarly, Riley was cited as allegedly teaching an initial slower rate of retraction. None of these secondary references, whether alone or in combination, teaches the features of claims 23 and 27, as amended.

Claims 26 and 28 each depend from amended independent claim 23, and thus are believed to be patentable for at least the reasons presented above with respect to claim 23. Similarly, because claims 32-36 ultimately depend from amended claim 23, and claim 37 depends from amended claim 27, claims 32-37 are also urged as patentable over the cited art.

CONCLUSION

In light of the present amendments, Applicants respectfully submit that all pending claims are in condition for allowance.

No additional fees are believed due with the filing of this Amendment and Response to Final Office Action. However, if any such fee is due, the Director is hereby authorized to charge any such fees or credit any overpayments to Deposit Account No. 50-0540.

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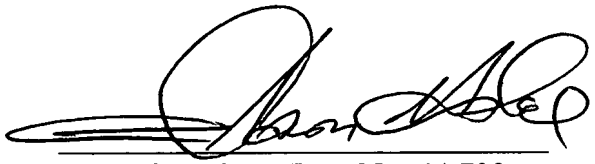
Respectfully submitted,



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